Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

UOP LLC
UOP LLC - Shreveport Plant
Shreveport, Caddo **Parish, Louisiana**
Agency Interest Number: 17846
Activity Number: PER20070010
Proposed Permit Number: 0500-00020-V4

I. APPLICANT

Company:
UOP LLC - Shreveport Plant
PO Box 21566
Shreveport, Louisiana 71120-1566

Facility:
UOP LLC
8725 Old Mooringsport Rd.
Shreveport, Caddo Parish, Louisiana

Latitude of the facility front gate: 32° 37' 7"
Longitude of the facility front gate: 93° 55' 29"

II. FACILITY AND CURRENT PERMIT STATUS

UOP LLC Shreveport Plant (UOP), an existing catalyst manufacturing facility, located approximately 15 miles northwest of Shreveport, in Caddo Parish, began operation in 1950 prior to promulgation of the Louisiana Air Quality Regulations in 1969. The plant operated under various permits in the form of certificates, exemptions and variances, the last of which, a variance request for installing controls on the existing spherical catalyst manufacturing unit (SCM) to net out of PSD review, was granted on December 27, 1990.

UOP LLC - Shreveport Plant is a designated Part 70 source and currently operates under Permit 0500-00020-V3, issued August 15, 2008.

III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application was submitted on November 5, 2007 requesting a modification to the Part 70 operating permit for the UOP, LLC – Shreveport Plant. The application was subsequently revised on December 13, 2007 and February 18, 2008. Additional information dated June 10, 2008 was also submitted. A final revision was submitted August 29, 2008.

Project

UOP, LLC Shreveport Plant proposes the following changes:

1. Increase by 1.00 ton the chlorine annual emissions from SCM Line 3 Oxidizer Caustic Scrubber Stack, Emission Point 630-01, and decrease by the same amount the chlorine annual emissions from SCM Line 2 CAP, GRP 006, and adjust the respective average hourly emission rates accordingly,
2. Increase the chlorine maximum hourly rate emission for SCM Line 3 Oxidizer Caustic Scrubber Stack, Conical Evaporators Fume Scrubber, Line 2 SCR Vent, Emission Points 630-01, 240-09-A and 240-09-B, respectively,
3. Increase the hydrochloric acid maximum hourly emission rate for Line 3 Oxidizer Caustic Scrubber Stack, Emission Point 630-01, and change the operating (surrogate) parameters of the scrubber as follows:
   - Change recycle flow from a rate of ≥130 gpm to a rate of ≥200 gpm,
   - Change the pressure range from "5 – 20 in. H_2O" to "0.8 – 5.8 in. H_2O",
   - Change requirement on NaOH concentration of 1.0% to that of a pH≥9.0, and
   - Change the monitoring requirement from NaOH concentration to pH.
4. Removal of the aluminum sulfate storage tanks currently listed included in the insignificant activities list and eliminate Fee No. 0460 corresponding to Aluminum Sulfate Production,
5. Establishment of a Catalyst Trial Emissions CAP, Emission Point CTEC to cover the emissions from catalyst and catalyst base trial runs on SCM Lines 1, 2 and 3,
6. Removal of aluminum sulfate production line (thus, the associated fee 0460), and
7. Incorporate into the permit three replacement inorganic storage tanks and one inorganic tank previously approved under case-by-case insignificant activity requests.

Proposed Permit

Permit 0500-00020-V4 will be the modification of Part 70 operating permit 0500-00020-V3 for the UOP, LLC – Shreveport Plant.

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Permitted Air Emissions

Estimated emissions in tons per year are as follows:

Pollutant	Before	After	Change
PM_{10}	75.11	79.07*	+ 3.96
SO_2	9.03	9.17	+ 0.14
NO_X	416.63	436.53	+ 19.90
CO	308.25	329.15	+ 20.90
VOC	343.52	344.20	+ 0.68

**Includes 44.15 TPY of Aluminum oxide (Al_2O_3) emissions.*

VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):

Pollutant	Before	After	Change
Benzene	0.123	0.123	-
Cumene	0.001	0.001	-
Dimethyl formamide	0.045	0.082	+ 0.037
Dimethylnaphthalene (PAH)	1.860	1.860	-
Ethyl benzene	0.073	0.073	-
Formaldehyde	6.561	7.110	+ 0.549
Toluene	0.087	0.087	-
Xylene *(isomers)*	0.011	0.011	-
Total	8.761	9.347	0.586
Other VOCs (TPY)	334.76	334.85	+ 0.093

Non-VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):

Pollutant	Before	After	Change
Ammonia	143.830	145.53	+ 1.700
Chlorine	4.442	5.340	+ 0.898
Cobalt Oxide	0.092	0.184	+ 0.092
Copper Oxide	0.141	0.281	+ 0.140
Hydrochloric Acid	47.151	49.240	+ 2.089

Non-VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):

Pollutant	Before	After	Change
Hydrogen fluoride	3.090	4.500	+ 1.410
Hydrogen Sulfide	0.438	0.438	-
Manganese Dioxide	0.011	0.022	+ 0.011
Nickel Oxide	0.081	0.113	+ 0.032
Nitric Acid	8.583	10.083	+ 1.500
Sulfuric Acid	0.122	0.122	-
Total	207.981	215.853	+ 7.872

IV REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

Applicability and Exemptions of Selected Subject Items

ID No.	Requirement	Note
SHREVEPORT PLANT UNF0001	Prevention of Significant Deterioration of Air Quality [40 CFR 52.21/LAC 33:III.509]	**DOES NOT APPLY.** The emission increases requested in this application are less than the significance levels defined in LAC 33:III.509B. UOP Shreveport Plant does not have any PSD permits.
	NESHAP Subpart FF - Standards for Benzene Waste Operations [40 CFR 61.340]	**EXEMPT.** Total mass of benzene in facility waste is less than 1 Mg/yr. In accordance with 40 CFR 61.357, an initial report was submitted to the EPA in April 1993 that summarized the regulatory status of each waste stream subject to 61.342.
GRP0003 or EQT058 EQT059 FUG002	NSPS Subpart VVV - Polymeric Coating of Supporting Substrates Facilities [40 CFR 60.740]	**DOES NOT APPLY.** Does not meet the definition given in 60.740. Polymeric coating is performed in the Sarex Unit; however, the polymer used in the unit is polyethyleneimine (PEI) which is a waterborne coating of less than 9% volatiles. In addition, the process is not a web coating process.
GRP0004 or EQT028 EQT033 EQT035 EQT036 FUG008	NESHAP/MACT Subpart DD - NESHAP from Off-Site Waste and Recovery Operations [40 CFR 63.680]	**EXEMPT.** Total annual quantity of HAP that is contained in the spent catalyst (off-site material) received at this unit is less than 1 Mg/yr. Recordkeeping requirements only per 40 CFR 63.680(d)(1) through (3).

Boilers EQT005 EQT006 EQT007	NSPS Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units [40 CFR 60.40(b)]	**DOES NOT APPLY.** Boilers have a maximum heat input less than 100 MMBTU/hr. [40 CFR 60.40(b)(a)]
	NSPS Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units [40 CFR 60.40c]	**EXEMPT.** No construction, modification, or reconstruction commenced after 6/9/89. [40 CFR 60.40c(a)]
Process Vent/ Cyclone/ Scrubber *(emissions from natural gas burners, calcining ovens, drying ovens, inorganic and organic fumes)* EQT056, RLP021	NSPS Subpart UUU - Standards of Performance for Calciners and Dryers in Mineral Industries [40 CFR 60.730]	**DOES NOT APPLY.** UOP is not a mineral industry. [40 CFR 60.731] Per an applicability determination by EPA on 9/12/1996, the UOP facility does not process mineral alumina, but does process synthetic alumina which does not apply. The alumina processed at the facility is produced synthetically using a combination of pure aluminum, hydrochloric acid, and/or aluminum hydroxychloride solution as the raw feed materials. (The mineral industry produces alumina from bauxite ore.)

Prevention of Significant Deterioration/Nonattainment Review

NA

Streamlined Equipment Leak Monitoring Program

NA

MACT Requirements

Comprehensive Toxic Air Pollutant Emission Control Program [LAC 33:III.Chapter 51]. **APPLIES (STATE ONLY).** LDEQ MACT determination is that the facility complies with specific sections of 40CFR63 Subpart G for storage vessels. However Subpart G does not apply because the facility is not a chemical manufacturing process unit as defined in 40CFR 63 Subpart F. Therefore, this remains a state only requirement.

Air Quality Analysis

Dispersion Model(s) Used: ISCST/ISCLT

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Toxic Air Pollutant Ambient Air Quality Standard or (National Ambient Air Quality Standard {NAAQS})
PM_{10}	24-hour	(5.46 $\mu g/m^3$)	(150.00 $\mu g/m^3$)
PM_{10}	Annual	(0.77 $\mu g/m^3$)	(50.00 $\mu g/m^3$)
NO_x	Annual	(11.55 $\mu g/m^3$)	(100.00 $\mu g/m^3$)
NH_3	8-hour	262.95 $\mu g/m^3$	640.00 $\mu g/m^3$
Al_2O_3	8-hour	148.50 $\mu g/m^3$	238.10 $\mu g/m^3$

Benzene	Annual	0.049	µg/m³	12.00	µg/m³
Formaldehyde	Annual	0.019	µg/m³	7.69	µg/m³
HCl	8-hour	29.95	µg/m³	180.00	µg/m³
Cl_2	8-hour	1.17	µg/m³	95.00	µg/m³
HF	8-hour	2.65	µg/m³	61.90	µg/m³
HNO_3	8-hour	27.07	µg/m³	120.00	µg/m³
H_2SO_4	8-hour	8.01	µg/m³	23.80	µg/m³

Data obtained from the "Air Dispersion Modeling for Toxic Air Pollutants" report submitted to LDEQ January 1993.

PM_{10} modeling, above, did not include emissions of Aluminum Oxide (Al_2O_3), which is particulate matter. LDEQ Office of Environmental Assessment – Air Quality Assessment performed an ISCST3 (screen) for PM_{10}, March 2005; which incorporated Al_2O_3 emissions into the total PM_{10} emissions. The screen results showed that the total PM_{10} emissions are within the ambient air quality standards and no further modeling is required of the facility at this time.

ISCST3 Screen	PM_{10}	24-hour	147.40	µg/m³
	PM_{10}	Annual	17.20	µg/m³

Emissions associated with the proposed modification were reviewed by the Air Quality Assessment Division to ensure compliance with the NAAQS and AAS. LDEQ did not require the applicant to model emissions.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

V. PERMIT SHIELD

NA

VI. PERIODIC MONITORING

Dust collectors

- Filter vents: Visible emissions monitored by visual inspection/determination daily during operation. [LAC 33:III.507.H.1.a]

Scrubbers

- Flow rate monitored by flow rate monitoring device once every four hours. [LAC 33:III.507.H.1.a]
- pH monitored by pH instrument once every four hours. [LAC 33:III.507.H.1.a]
- Pressure drop monitored by pressure drop instrument once every four hours. [LAC 33:III.507.H.1.a]

Line 1 SCR Vent

- Nitrogen dioxide monitored by analyzer once every four hours when the process emissions are being routed to this equipment (SCR). The SCR is equipped with two Nitrogen oxide analyzers one at the incoming process gas stream line and the other at the SCR outlet vent. Therefore, should the outlet analyzer malfunction, mass balance along with the average SCR NOx reduction efficiency, derived from the analyzers historical recorded data, shall be employed to calculate and record the NOx concentration at the SCR outlet vent for the duration of the analyzer malfunction.

  Timely document when and why the SCR is not in use (malfunctions and/or process emissions are routed to either one of the two SCM Line 1 control systems: the scrubber or the thermal oxidizer) and when it is put back in use. [LAC 33:III.507.H.1.a]

VII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H_2S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act

(CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_X) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: $\geq$ 10 tons per year of any toxic air pollutant; $\geq$ 25 tons of total toxic air pollutants; and $\geq$ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10} – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO_2) – An oxide of sulfur.

Sulfuric Acid (H_2SO_4) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.

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